

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 26 MAY 2004

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Applicant's or agent's file reference 0001Therm09.PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IB 02/05496	International filing date (<i>day/month/year</i>) 18.12.2002	Priority date (<i>day/month/year</i>) 18.01.2002
International Patent Classification (IPC) or both national classification and IPC B65D81/18		
Applicant THERMAGEN et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

Date of submission of the demand 26.07.2003	Date of completion of this report 25.05.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Philippon, D Telephone No. +49 89 2399-2617 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IB 02/05496**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-12 as originally filed

Claims, Numbers

1-15 received on 24.04.2004 with letter of 13.04.2004

Drawings, Sheets

1/2, 2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-15
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

A self-cooling beverage package device according to the preamble of claim 1 is known from D1 = WO-A-01 10738, see in particular the first cavity 10 containing a beverage for consumption, the second cavity 30 (evaporator) forming a heat exchanger and containing a refrigerant liquid and its vapour, the third cavity 22 containing adsorbent 24 for pumping said vapour, and the means 28 for putting the second cavity 30 into communication with the third cavity 22 for operation of the device.

The third cavity 22 is contained in a plastic container 25 filled with heat sink material 26. The plastic container 25 provides a physiological protection against the cavity containing the hot adsorbent.

The package according to claim 1 differs from this prior art by the explicit features concerning the heat flows: an external thermal insulation layer is provided around the third cavity such that the heat flow from the adsorbent through the outside wall of the third cavity and through the external insulation layer is larger or equal to the heat flow from the adsorbent towards the second and the first cavities during operation of the device.

In the prior art device the heat generated by the adsorbent in the third cavity is trapped using a heat sink. Thus nothing suggests the skilled person to provide an external insulation layer designed such that the heat flow from the adsorbent through the outside wall of the third cavity and through the external insulation layer is larger or equal to the heat flow from the adsorbent towards the second and the first cavities during operation of the device.

The subject-matter of claim 1 thus involves an inventive step.

Claims 2-15 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

CLAIMS

1. A self-cooling beverage package device having:

5 - a first cavity (10) containing a beverage for consumption,

 - a second cavity (20) forming a heat exchanger and containing a refrigerant liquid and its vapour,

 - a third cavity (30) containing adsorbent (31) for pumping of said vapour

10 - means (50) for putting said second cavity into communication with said third cavity for operation of the device,

15 characterised in that the third cavity (30) is provided with an external thermal insulation layer (35) providing a physiological protection against burns and designed such that the heat flow from the adsorbent (31) through the outside wall of the third cavity (30) is larger or equal to the heat flow from the adsorbent (31) towards the second (20) and first (10) cavities
20 during operation of the device.

2. A self-cooling beverage package according to Claim 1, characterised in that the temperature of the external surface of the insulation layer (35) rises to more than 70°C during operation of the device.

25 3. A self-cooling beverage package according to one of Claims 1 to 2, characterised in that the thermal insulation layer (35) has a thermal conductance less than or equal to $500 \text{ W.m}^{-2}.\text{K}^{-1}$.

4. A self-cooling beverage package according to Claim 3, characterised in that the thermal conductance of the insulating layer is between 20 and 60 $\text{W.m}^{-2}.\text{K}^{-1}$.

5 5. A self-cooling beverage package according to one of the preceding claims, characterised in that the thermal insulation layer (35) has a thickness between 0.5 and 1.5 mm.

10 6. A self-cooling beverage package according to one of the preceding claims, characterised in that the thermal insulation layer (35) has a variable thickness.

7. A self-cooling beverage package according to Claim 1, characterised in that the thermal insulation layer (35) includes a material melting at a temperature between 40°C and 80°C.

15 8. A self-cooling beverage package according to Claim 7, characterised in that the thermal insulation layer consists of at least two layers, one of them including the melting material.

20 9. A self-cooling beverage package according to one of the claims 7 to 8, characterised in that the thermal insulation layer (35) has a thickness between 3 and 10 mm.

25 10. A self-cooling beverage package according to one of Claims 1 to 9, characterised in that the thermal insulation layer (35) surrounds the third cavity (30) consisting of a metal container.

30 11. A self-cooling beverage package according to one of Claims 1 to 10, characterised in that the thermal insulation layer (35) extends around the first cavity (10).

12. A self-cooling beverage package according to one of the preceding claims, characterised in that the thermal insulation layer (35) has a thermochromic label (36).

5 13. A self-cooling beverage package according to Claim 12, characterised in that the thermochromic label (36) is disposed opposite the third cavity (30).

10 14. A self-cooling beverage package according to Claim 12, characterised in that the thermochromic label (36) is disposed opposite the first cavity (10).

15 15. A self-cooling beverage package according to one of the preceding claims, characterised in that the thermal insulation layer (35) consists of cardboard and/or paper and/or plastic.